

What is claimed is:

1. Method for depositing in particular crystalline layers on substrates lying on rotationally driven substrate holders (2) in a process chamber (1), the substrate holders (2) being disposed around the center of a rotationally driven substrate holder carrier, which substrate holders (2) together with the substrate holder carrier (3) form a process chamber base (4), opposite which there is a process chamber cover (5) with a central gas inlet element (6), through which one or more gaseous starting materials are introduced together with a carrier gas into a decomposition zone which is disposed above a heated central region (4') of the process chamber base (4) and is surrounded by a diffusion zone (4''), from which the decomposition products transported in the radially outwardly flowing carrier gas stream reach the substrate, characterized in that the central region (4') of the process chamber base (4) is rotationally driven in relation to the substrate holder carrier (3) and the process chamber cover (5) or the gas inlet element (6).

2. Apparatus for depositing in particular crystalline layers on in particular crystalline substrates resting on rotationally drivable substrate holders (2) in a process chamber (1) of the apparatus, the substrate holders (2) being disposed around the rotational center of a rotationally drivable substrate holder carrier (3), which substrate holders (2) together with the substrate holder carrier (3) form a process chamber base (4), opposite which there is a process chamber cover (5) with a central gas inlet element (6), the central region (4') of the process chamber base (4) giving off heat to one or more gaseous starting materials introduced into the process chamber (1) through the gas inlet element (6) as a result of heating (8), characterized in that the central region (4') of the process chamber base (4) is rotationally drivable in relation to the substrate holder carrier (3) and the process chamber cover (5) or the gas inlet element (6).

3. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized in that the substrate holders (2) and a center plate (7), which with its surface forms the central region (4'), are rotationally mounted on a gas cushion (9, 10).

4. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized in that the thermal conductivity of the gas cushion (9) carrying and rotationally driving the center plate (7) can be set by choosing the gas mixture, the gas mixture comprising a gas with a high thermal conductivity and a gas with a low thermal conductivity.

5. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized in that the center plate (7) consists of graphite, in particular coated graphite, an inert metal, for example molybdenum, ceramic or quartz.

6. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized in that the center plate rotates in the same direction as or in the opposite direction to the substrate holder carrier.

7. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized in that the center plate (7) is carried by substrate holder carrier (3).

8. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized in that the substrate holder carrier (3) comprises more than one part and in particular is held centrally by two clamping plates (11, 12), the center plate (7) lying above the uppermost clamping plate (11).

9. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized by a coaxial supply line (19, 20) of the gas streams forming the gas cushions (9, 10).

10. Method or apparatus according to one or more of the preceding claims or in particular according thereto, characterized in that the center plate (7) is rotationally driven mechanically, in particular by means of a drive shaft or by means of drive wheels.